Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1- 43 (Cancelled)

Claim 44. (Currently amended) A method of selecting inhibitors of an autoinducer molecule of *Pseudomonas aeruginosa* comprising:

contacting the autoinducer molecule with a suspected inhibitor;

measuring the ability of the treated autoinducer molecule to stimulate the activity of LasR~~a selected gene~~;

determining whether the suspected inhibitor inhibits the ability of the autoinducer molecule to stimulate the activity of LasR~~a selected gene~~; and

selecting the suspected inhibitors that inhibit the autoinducer molecule.

Claim 45. (Currently amended) A method of selecting synergists of an~~the~~ autoinducer molecule of *Pseudomonas aeruginosa* comprising:

contacting the autoinducer molecule with a suspected synergist;

measuring the ability of the treated autoinducer molecule to stimulate the activity of LasR~~a selected gene~~;

determining whether the suspected synergist enhances the ability of the autoinducer molecule to stimulate the activity of LasR~~a selected gene~~; and

selecting the suspected synergists that enhance the activity of the autoinducer molecule.

Claim 46. (Withdrawn) A culture medium containing as an added compound N-(3-oxododecanoyl)homoserine lactone at a concentration effective to stimulate or promote cellular metabolism, growth, or recovery.

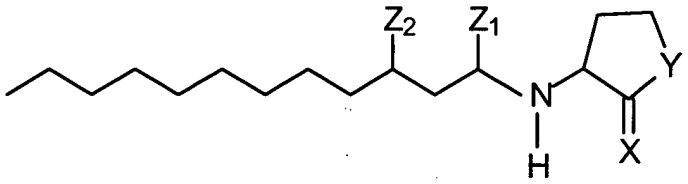
Claim 47. (Withdrawn) The culture medium of claim 46 wherein the cellular growth of *Pseudomonas aeruginosa* is stimulated or enhanced.

Claim 48. (Withdrawn) A method of regulating the expression of a gene comprising:

inserting a gene into bacteria chosen for enhancement of gene expression by an agent that enhances the activity of the LasR protein; and

incubating the bacteria with an agent that enhances the activity of the LasR protein such that the expression of the gene is regulated.

Claim 49. (Withdrawn) The method of claim 48, wherein the agent is a compound of the following formula:



wherein Y is O, S, or NH; X is O, S, or NH; and Z_1 and Z_2 are independently selected from the group consisting of hydrogen =O, =S, and =NH; the molecule being able to regulate gene expression.

Claim 50. (Withdrawn) The method of claim 48, wherein the agent is N-(3-oxododecanoyl) homoserine lactone.

Claim 51. (Withdrawn) The method of claim 48 wherein the method further comprises the additional steps of:

allowing the gene expression to reach a desired level; and

incubating the bacteria with an agent that inhibits the activity of the LasR protein regulating the gene expression by the bacteria.

Claim 52. (Withdrawn) A method of regulating the expression of a gene comprising:

inserting a gene into a cell chosen for enhancement of gene expression by N-(3-oxododecanoyl)homoserine lactone; and

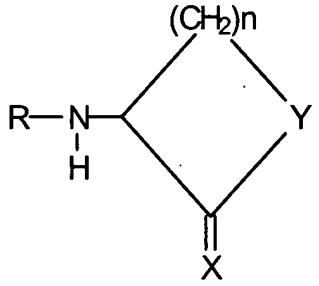
incubating the cell with N-(3-oxododecanoyl)homoserine lactone such that the expression of the gene is regulated.

Claim 53. (Withdrawn) The method of claim 52 wherein the method further comprises the additional steps of:

allowing the gene expression to reach a desired level; and

incubating the cell with an agent that inhibits the activity N-(3-oxododecanoyl)homoserine lactone regulating the gene expression by the cell.

Claim 54. (Currently amended) The method of claim 44, wherein the autoinducer molecule comprises a compound~~molecule~~ of the formula I:



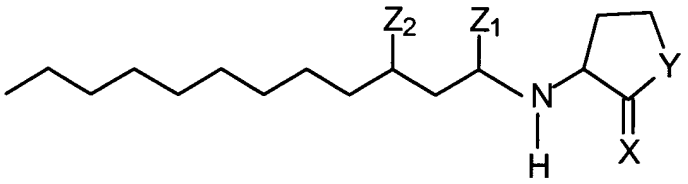
wherein n is 2 or 3; Y is O, S, or NH; X is O, S, or NH; and R is a fatty hydrocarbon or acyl moiety that may be substituted or a moiety having at least seven members containing a ring structure that may be substituted, wherein the molecule is able to stimulate the activity of the selected gene of *Pseudomonas aeruginosa*.

Claim 55. (Previously presented) The method of claim 54 wherein R is a C_7 - C_{14} acyl moiety.

Claim 56. (Previously presented) The method of claim 55 wherein R is a C_{10} or higher acyl moiety.

Claim 57. (Previously presented) The method of claim 56 wherein R is a C_{12} acyl moiety.

Claim 58. (Previously presented) The method of claim 57, wherein the autoinducer molecule comprises a molecule of the formula II:



wherein X is O, S, or NH; Y is O; and Z_1 and Z_2 are independently selected from the group consisting of hydrogen, =O, =S, and =NH.

Claim 59. (Previously presented) The method of claim 44, wherein the autoinducer molecule is N-(3-oxododecanoyl)homoserine lactone.

Claim 60. (Previously presented) The method of claim 54 wherein R contains a heterocyclic ring structure.

Claim 61. (Previously presented) The method of claim 60 wherein the heterocyclic ring structure has five to seven ring members.

Claim 62. (Previously presented) The method of claim 61 wherein the heterocyclic ring structure contains oxygen.

Claim 63. (Previously presented) The method of claim 54 wherein R contains a carbocyclic ring structure.

Claim 64. (Previously presented) The method of claim 63 wherein the carbocyclic ring structure is a fused ring system.

Claim 65. (Previously presented) The method of claim 54 wherein the molecule is purified from its native source.

Claim 66. (Previously presented) The method of claim 65 wherein the native source is the culture media of *Pseudomonas aeruginosa*.

Claim 67. (Previously presented) The method of claim 54 wherein the molecule is synthesized by chemical means.

Claim 68. (Previously presented) The method of claim 54 wherein the molecule is an optically active isomer.

Claim 69. (Previously presented) The method of claim 68 wherein the isomer is the L-isomer.

Claim 70. (Previously presented) The method of claim 68 wherein the isomer is the D-isomer.

Claim 71-73. (Cancelled)

Claim 74. (Previously presented) The method of claim 44, wherein the step of contacting the autoinducer molecule with the suspected inhibitor further comprises combining the autoinducer molecule and the suspected inhibitor with *E. coli* MG4.

Claim 75. (Currently amended) The method of claim 74, wherein the step of measuring the ability of the treated autoinducer molecule to stimulate the activity of LasR~~the selected gene~~ comprises measuring the amount of β-galactosidase produced as a

result of combining the autoinducer molecule and the suspected inhibitor with *E. coli* MG4.

Claim 76. (Currently amended) The method of claim 75, wherein the step of determining whether the suspected inhibitor inhibits the ability of the autoinducer molecule to stimulate the activity of LasR~~the selected gene~~ comprises comparing the amount of β-galactosidase produced to a standard to determine if the suspected inhibitor represses the ability of the autoinducer to stimulate the production of β-galactosidase.

Claim 77. (Withdrawn) An inhibitor of an autoinducer molecule of *Pseudomonas aeruginosa*, wherein the inhibitor is selected by the method of claim 44.

Claim 78. (Withdrawn) The inhibitor of claim 77, wherein the inhibitor is an analog of N-(3-oxododecanoyl)homoserine lactone.

Claim 79. (Withdrawn) The inhibitor of claim 78, wherein the analog is an antagonist of the LasR protein of *Pseudomonas aeruginosa*.